AMENDMENTS TO CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for embedding data in an input digital medium, comprising the steps of:

(a) generating a set of multi-level screens, each multi-level screen being generated by selecting a set of colors that comprise the colors that can be output by that multi-level screen, such that, for a single color, c_m color levels are selected to form an ordered set such that $c_m < c_{m+1}$;

(b) screening the input digital medium with the generated multi-level screens using a dither matrix and a set of level matrices; and

(c) selecting, for each of select number of pixel locations in the input digital medium, one of the level matrices, based on a message symbol to be embedded at that pixel location, to create an output, thereby embedding data in the input digital medium.

2. (Canceled)

3. (Currently Amended) A method as recited in claim ~~2~~1, wherein the generating of each multi-level screen in the set comprises determining an output color corresponding to an input color c at a given pixel location in the input digital medium by:

finding an index r such that $c_r \le c \le c_{r+1}$; and

performing one of the following steps:

outputting c_0, if $c \le c_0$;

outputting c_{M-1}, if $c \ge c_{M-1}$; or

computing $t = (c - c_r)/(c_{r+1} - c_r)$, if $c_0 < c < c_{m-1}$, and determining if $t < d_{u \bmod P, v \bmod Q}$, and

outputting c_r, if $t < d_{u \bmod P, v \bmod Q}$, or

outputting c_{r+1}, if $t \ge d_{u \bmod P, v \bmod Q}$

wherein M represents the number of levels of that multi-level screen, $D = [d_{ij}]$ denotes the dither matrix and $P \times Q$ defines its size, and (u,v) identifies a location in the input digital medium.

4. (Original) A method as recited in claim 1, wherein, for each selected pixel location in the input digital medium, the level matrix used to create the corresponding output is selected independently or as a function of the neighboring input and output colors.

5. (Currently Amended) An apparatus for embedding data in an input digital medium, the apparatus comprising:

~~means for~~ generating unit that generates a set of multi-level screens, each multi-level screen being generated by selecting a set of colors that comprise the colors that can be output by that multi-level screen, such that, for a single color, c_m color levels are selected to form an ordered set such that $c_m < c_{m+1}$;

~~means for~~ screening unit that screens the input digital medium with the generated multi-level screens using a dither matrix and a set of level matrices; and

~~means for~~ selecting unit that selects, for each of select number of pixel locations in the input digital medium, one of the level matrices, based on a message symbol to be embedded at that pixel location, to create an output, thereby embedding data in the input digital medium.

6. (Original) The apparatus of claim 5, wherein the apparatus comprises a computer, printer, or photocopier.

7. (Currently Amended) A machine-readable medium having a program of instructions for directing a machine to embed data in an input digital medium, the program of instructions comprising:

~~(a) instructions for~~ generating a set of multi-level screens, each multi-level screen being generated by selecting a set of colors that comprise the colors that can be output by that multi-level screen, such that, for a single color, c_m color levels are selected to form an ordered set such that $c_m < c_{m+1}$;

~~(b) instructions for~~ screening the input digital medium with the generated multi-level screens using a dither matrix and a set of level matrices; and

~~(c) instructions for~~ selecting, for each of select number of pixel locations in the input digital medium, one of the level matrices, based on a message symbol to be embedded at that pixel location, to create an output, thereby embedding data in the input digital medium.

8-10. (Canceled)